

Project Report

**Exploration of an Experimental Paradigm for Investigating Implicit
Cultural Transmission (AOARD-09-4093)**

Yoshihisa Kashima,* Simon Laham

Psychological Sciences, The University of Melbourne
Melbourne, Australia

*Email: ykashima@unimelb.edu.au

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 30 NOV 2010		2. REPORT TYPE Final		3. DATES COVERED 15-08-2009 to 29-11-2010	
4. TITLE AND SUBTITLE Exploration of an Experimental Paradigm for Investigating Implicit Cultural Transmission				5a. CONTRACT NUMBER FA23860914093	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Yoshihisa Kashima				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Melbourne, Department of Psychology, Melbourne Victoria 3010, Australia, NA, NA				8. PERFORMING ORGANIZATION REPORT NUMBER N/A	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) AOARD, UNIT 45002, APO, AP, 96338-5002				10. SPONSOR/MONITOR'S ACRONYM(S) AOARD	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) AOARD-094093	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT This report describes a two-person extension of Woud, Becker, and Rinck's evaluative conditioning task to examine how a person's embodied attitudes towards objects are culturally transmitted to another person while they are both participating in a joint activity.					
15. SUBJECT TERMS sociocultural modeling & prediction, Psychology					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 5	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Introduction

This project consisted of three experiments aimed at the development and validation of an experimental paradigm, the *Joint Pull-Push Task*. This task is a two-person extension of Woud, Becker, and Rinck's (2008) evaluative conditioning task, and enables us to examine how a person's embodied attitudes towards objects are culturally transmitted to another person while they are both participating in a joint activity. This task was designed to be used in laboratory-based studies of the implicit transmission of cultural information (in this particular case, attitudes).

Results and Discussion

Experiment 1 was a conceptual replication of a previously published study to test the hypothesis that one's push or pull behavior towards an object produces an implicit attitude to the object (Proposition 1). This involved a single-person version of the push-pull task. We conducted three experiments of this type (1a, 1b, and 1c). We needed to do this as our first attempts at producing implicit attitudes were not successful. We were able to do this because we could use the grant to hire lower level RAs, instead of funding a post doc. Experiment 1a failed to replicate the published study. We then came across a more recently published study that suggests that the acquisition of an implicit attitude requires a push/pull motor behavior AND a verbal labelling of the behavior as "pushing" or "pulling". Based on this, we conducted a small second experiment (1b), which provided more promising although statistically marginal results. Experiment 1c embedded the task in a more meaningful context. Specifically, participants were encouraged to consider the task within a 'foraging' context, in which pull actions corresponded to collecting and push actions corresponded to discarding. This context produced strong implicit attitude conditioning: participants developed positive implicit attitudes to pulled stimuli and negative implicit attitudes to pushed stimuli.

Main Points. The study of Woud et al. was concerned with pushing or pulling behavior towards neutral human faces; in this case, this motor behavior was apparently sufficient to

produce attitudes (liking or disliking) towards those faces/people. However, this set of studies implies that a mere pushing or pulling behavior is insufficient to produce an attitude towards stimuli for which people have no prior attitudes. Instead, the *meaning* of pushing/pulling motor actions apparently needs to be disambiguated by the context in which the actions take place. Nonetheless, the experiments were very useful to specify the condition in which embodied attitudes can be produced.

Experiment 2 was a social extension of Experiment 1, in which two participants engaged in a joint task of pulling or pushing behaviors in response to stimuli. We were interested in examining whether interaction partners imitate each other's actions (pulling or pushing the same stimuli)(Proposition 2a) and whether the speed of one participant's action becomes similar to the other's (i.e., their actions become synchronized)(Proposition 2b). We conducted three experiments (2a, 2b and 2c) examining these propositions. Across all three experiments there is consistent evidence for Proposition 2b, that interaction partners synchronize the speed of their actions. As far as we know, this is the first time this phenomenon has been identified in the experimental context of what we call *referential behavior*, in which behavior is directed towards stimuli, although there is robust evidence for synchronization in non-referential behavior such as when two people are engaged in stepping actions repeatedly. The evidence for Proposition 2a is mixed across studies. Under some conditions, imitation occurs and under others complementarity occurs (which is characterized by a tendency for one partner to push if the other pulls, and vice versa). By manipulating various factors across studies, we have discovered conditions under which imitation vs. complementarity is the likely result. Specifically, when joint task instructions give the impression that each partner's individual contribution to the task matches the other's (i.e., matching instructions), imitation occurs. When the joint task instructions give the impression that each individual's contribution is unique and non-overlapping, complementarity occurs.

Main Points. Synchronization of behavior (i.e., performing actions at a similar timing) seems to be a more primitive process than imitation or mimicry (i.e., performing the same action)

when people are involved in joint tasks. Whether people imitate each other appears to depend on the representation of their task.

Experiments 2a, 2b, and 2c, also provided a test of Proposition 3: that, due to Proposition 1 (the condition of implicit attitudes via push/pull actions) and Proposition 2a (imitation of push/pull actions during a joint task), interaction partners' attitudes would become aligned. There was no consistent evidence of this across the three studies. This is most likely due to (a) the fact that in some studies behavioural complementarity, rather than mimicry occurred and (b) the fact that in some of the studies the conditioning effects were not strong enough (as mentioned above in studies 1a and 1b).

As a consequence of our failure to find consistent attitude alignment in joint interaction, it did not make sense to conduct Experiment 3, as planned. However, given that the conditions in which the propositions (1), (2a), and (2b) hold has become clear, we plan to conduct one more study that modifies the originally planned experiment.

Main Outcomes

On the basis of these initial studies, we were able to obtain a new grant for a project that will expand on the current studies. This grant builds on the work supported by the current AOARD grant. The current work has laid the foundation for examining the condition in which embodied attitudes are acquired and behavioral imitation occurs. The new grant further examines the effect of the interpersonal relationship between people who engage in joint pull-push tasks on imitation, synchronization, and implicit cultural transmission. In particular, it proposes to examine facilitating effects of leading people to think of themselves as members of a group that persists over time (i.e., an institution) on implicit cultural transmission. It also includes computer simulations of behaviors in joint pull-push tasks as well as other findings in the literature on joint actions.

We plan to conduct two additional experiments and write them up for publication together with the findings from Experiments 1a, 1b, and 1c.

We plan to conduct further analyses of the data from Experiments 2a, 2b, and 2c, as well as another experiment, which was conducted by a student supervised jointly by Kashima and Laham, and to write them up for publication in 2011.